

Clark, Nancy., Daniel Mills, & Jeremy Marchant (2000). Evaluation of the potential efficacy of the Alpha-Stim SCS in the horse. De Montfort University Equestrian Centre and Field Station, Caythorpe, Lincolnshire, United Kingdom, January, 2000.

After completing a successful pilot study of the stress reduction effects of the Alpha-Stim SCS in a six horse pilot study, a double-blind study was completed with 8 thoroughbred horses (2 fillies, 3 mares, 3 geldings) at the De Montfort University Equestrian Centre and Field Station at Caythorpe, Lincolnshire, United Kingdom. Alpha-Stim AS-Trode brand self adhesive electrodes were attached to shaved areas on each side of the neck beneath the collar. Alpha-Stim SCS devices were set to provide 0.5 Hz biphasic stimulation at 200 microamperes, or sham stimulation. Heart rate measurements (HR) were provided by an attached Polar Horse Trainer transmitter belt and a Polar Vantage receiver.

Observers blind to the treatment condition recorded duration of behaviors of body locomotion, head motion, ear position, oral behavior and the state of the lower lip at 15 second intervals for 15 seconds duration. Four trials were carried out each day for a total of 8 days (4 testing days per week). The frequency of each behavior was calculated and divided by the total number of observations for statistical analysis. The time standing alert decreased significantly from trial 1 to trial 4 ($p < 0.05$). The time spent standing alert also continued to decrease after the stimulation had stopped, suggesting an ongoing effect of CES following the period of actual stimulation. The horses spent significantly more time standing dozing between trials 1 and 4 ($p < 0.05$), less time with lower lip tense between trials 1 and 2 ($p < 0.05$), had less ear flicking from trial 1 to 3 ($p < 0.05$), increased head wobbling between phases 1 and 4 ($p < 0.05$), less time vocalizing between phase 1 and 4 ($p < 0.05$), and less time shaking the head between phases 1 and 3 ($p < 0.05$). All of these changes were highly intercorrelated and strongly indicated a reduction in the Horses' state of arousal following treatment but not sham treatment with Alpha-Stim CES. Finally, although not significant, there was a trend in which the variation in mean HR values decreased from the first to the latter phases of the study. HR fell more in the three horses with the highest mean HR going into the study.

The authors concluded that taken together these results are consistent with potentially beneficial effects using the Alpha-Stim SCS for horses. Effects were seen on the behaviors of greatest relevance to assessing anxious arousal in the given circumstances, namely time spent alert and dozing, and a number of other parameters consistent with relaxation. Specifically, there was no significant increase in any parameter associated with excitement nor is there any evidence that Alpha-Stim has any detrimental effects on the horse's wellbeing. A number of parameters, which may also be indication of relaxation, were not significantly effected by the Alpha-Stim SCS but this could be explained by their rarity. The results further suggest that CES effects extend beyond the period of immediate stimulation. Further work is needed to evaluate this potential therapy further and perhaps the most logical next stage is to conduct some form of blind, placebo controlled study on putatively anxious behaviors.



Figure 1.

Placement of self-adhesive electrodes during the Alpha-Stim CES horse experiment.